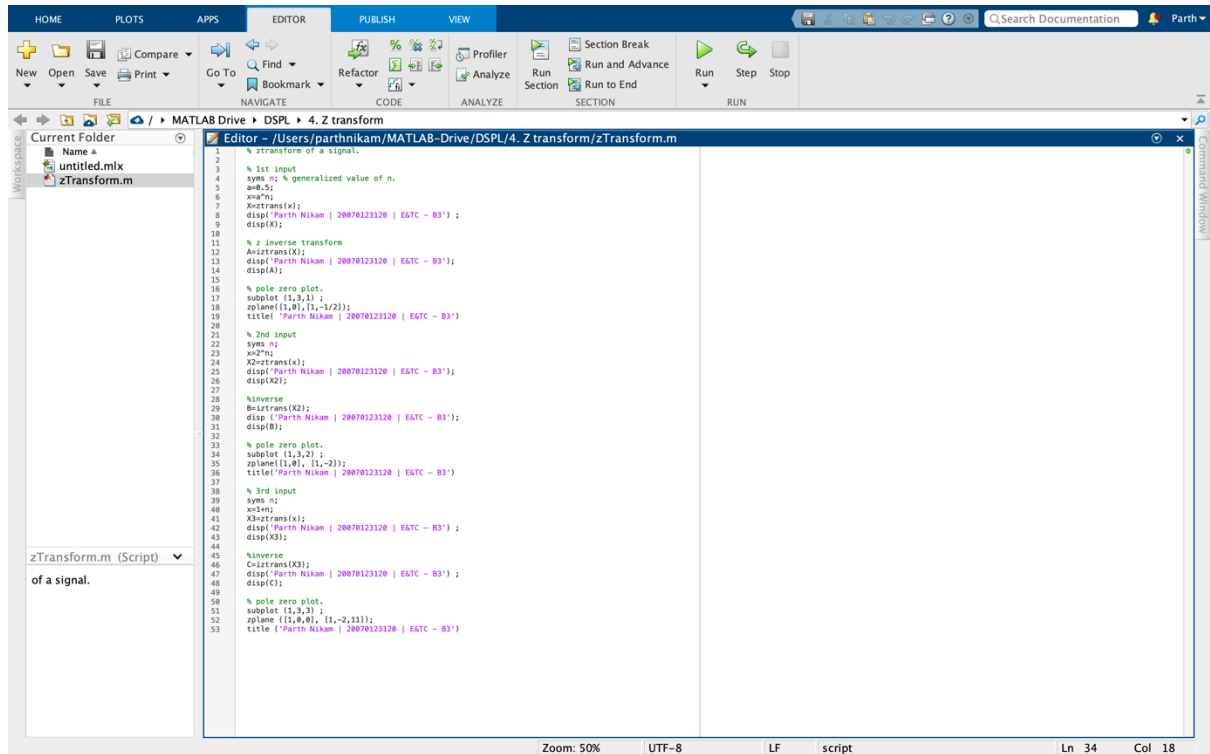


Digital Signal Processing Lab

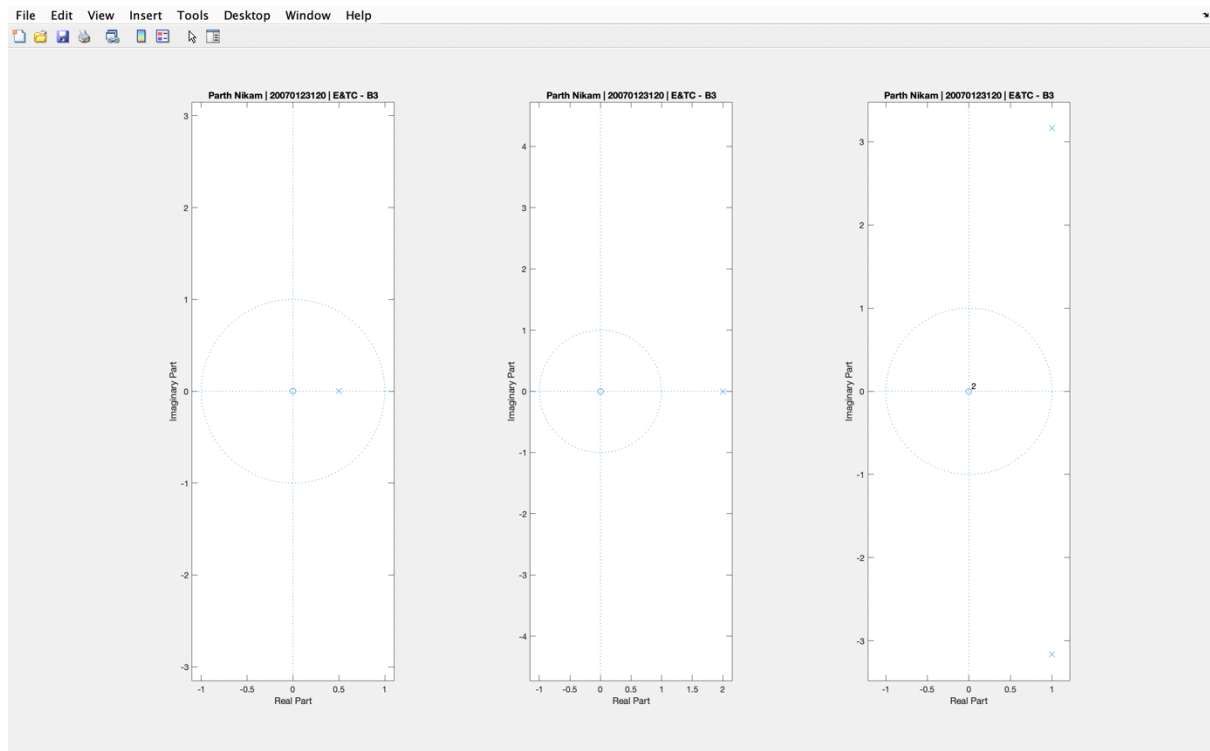
Parth Nikam
20070123120
E&TC – B3

Experiment 4: Z Transform



The image shows the MATLAB Editor window with the script `zTransform.m` open. The script defines three functions for Z-transforms: `zTransform`, `zInverse`, and `zTransform3`. Each function takes a signal `x` and a generalized value `n` as input and returns the transformed signal `X`. The script also includes pole-zero plots for each function. The workspace on the left shows the current folder and the script file. The command window on the right is empty.

```
1 % z transform of a signal.  
2  
3 % 1st input  
4 syms n % generalized value of n.  
5 a=8.5;  
6 a=n^n;  
7 X=zTransform(x);  
8 disp('Parth Nikam | 20070123120 | E&TC - B3');  
9 disp(X);  
10  
11 % z inverse transform  
12 A=zTransform(X);  
13 disp('Parth Nikam | 20070123120 | E&TC - B3');  
14 disp(A);  
15  
16 % pole zero plot.  
17 subplot(1,3,1);  
18 zplane(1,0),(1,-1/2));  
19 title('Parth Nikam | 20070123120 | E&TC - B3');  
20  
21 % 2nd input  
22 syms n;  
23 a=2^n;  
24 X2=zTransform(x);  
25 disp('Parth Nikam | 20070123120 | E&TC - B3');  
26 disp(X2);  
27  
28 % inverse  
29 B=zTransform(X2);  
30 disp('Parth Nikam | 20070123120 | E&TC - B3');  
31 disp(B);  
32  
33 % pole zero plot.  
34 subplot(1,3,2);  
35 zplane(1,0),(1,-2));  
36 title('Parth Nikam | 20070123120 | E&TC - B3');  
37  
38 % 3rd input  
39 syms n;  
40 x=1+n;  
41 X3=zTransform(x);  
42 disp('Parth Nikam | 20070123120 | E&TC - B3');  
43 disp(X3);  
44  
45 % inverse  
46 C=zTransform(X3);  
47 disp('Parth Nikam | 20070123120 | E&TC - B3');  
48 disp(C);  
49  
50 % pole zero plot.  
51 subplot(1,3,3);  
52 zplane(1,0),(1,-2,1));  
53 title('Parth Nikam | 20070123120 | E&TC - B3');
```

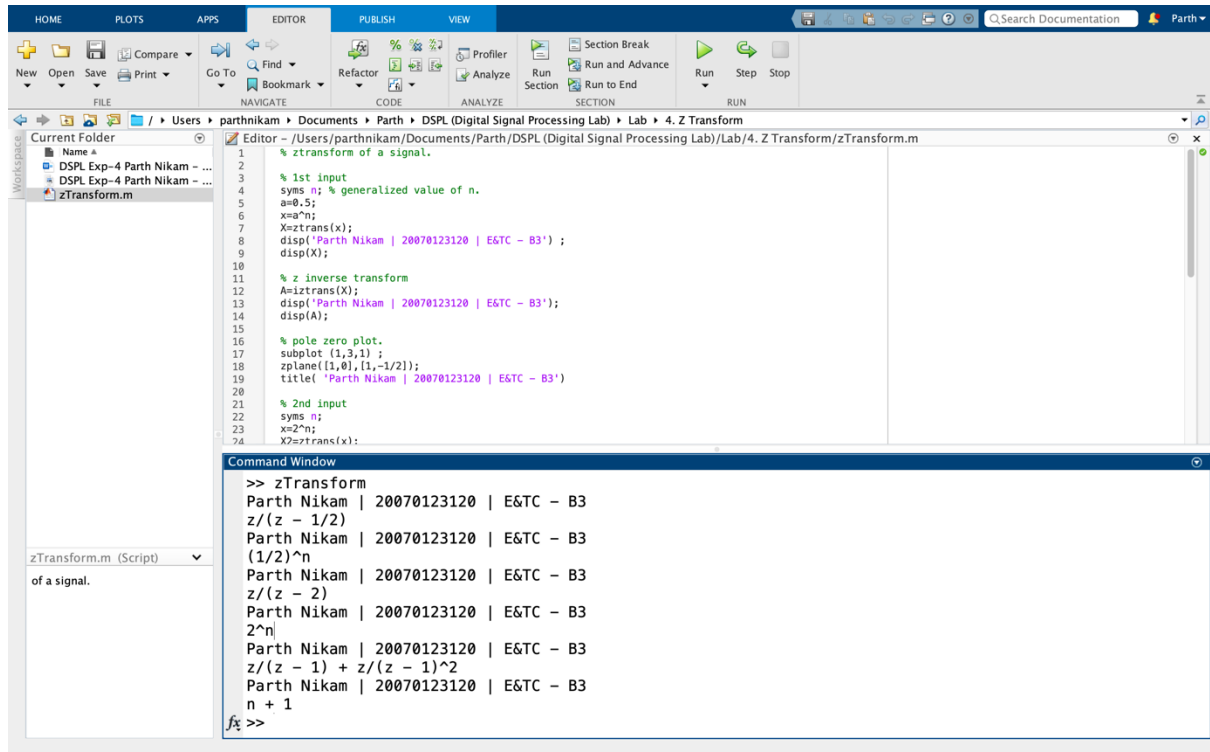


Digital Signal Processing Lab

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The image shows a MATLAB environment with a script editor and a command window. The script editor displays a MATLAB script for calculating the Z-transform and its inverse. The command window shows the output of the script, including the Z-transform of a signal and the inverse Z-transform.

```
1 % ztransform of a signal.
2
3 % 1st input
4 syms n; % generalized value of n.
5 a=0.5;
6 x=a^n;
7 X=ztrans(x);
8 disp('Parth Nikam | 20070123120 | E&TC - B3') ;
9 disp(X);
10
11 % z inverse transform
12 A=iztrans(X);
13 disp('Parth Nikam | 20070123120 | E&TC - B3');
14 disp(A);
15
16 % pole zero plot.
17 subplot(1,3,1) ;
18 zplane([1,0],[1,-1/2]);
19 title('Parth Nikam | 20070123120 | E&TC - B3')
20
21 % 2nd input
22 syms n;
23 x=2^n;
24 X=ztrans(x);
```

Command Window Output:

```
>> zTransform
Parth Nikam | 20070123120 | E&TC - B3
z/(z - 1/2)
Parth Nikam | 20070123120 | E&TC - B3
(1/2)^n
Parth Nikam | 20070123120 | E&TC - B3
z/(z - 2)
Parth Nikam | 20070123120 | E&TC - B3
2^n
Parth Nikam | 20070123120 | E&TC - B3
z/(z - 1) + z/(z - 1)^2
Parth Nikam | 20070123120 | E&TC - B3
n + 1
fx >>
```